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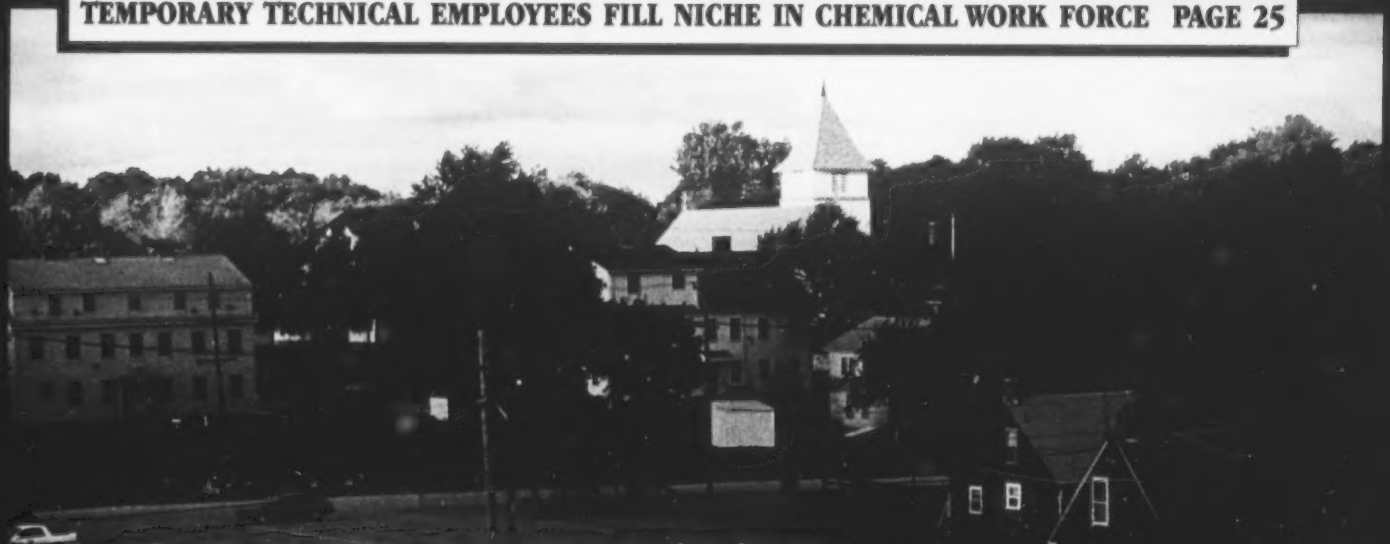
CHEMICAL & ENGINEERING NEWS

C&EN

FEBRUARY 28, 1994

TEMPORARY TECHNICAL EMPLOYEES FILL NICHE IN CHEMICAL WORK FORCE PAGE 25



COMMUNITY RELATIONS

Responsible Care efforts to improve citizen-company communications prove challenging

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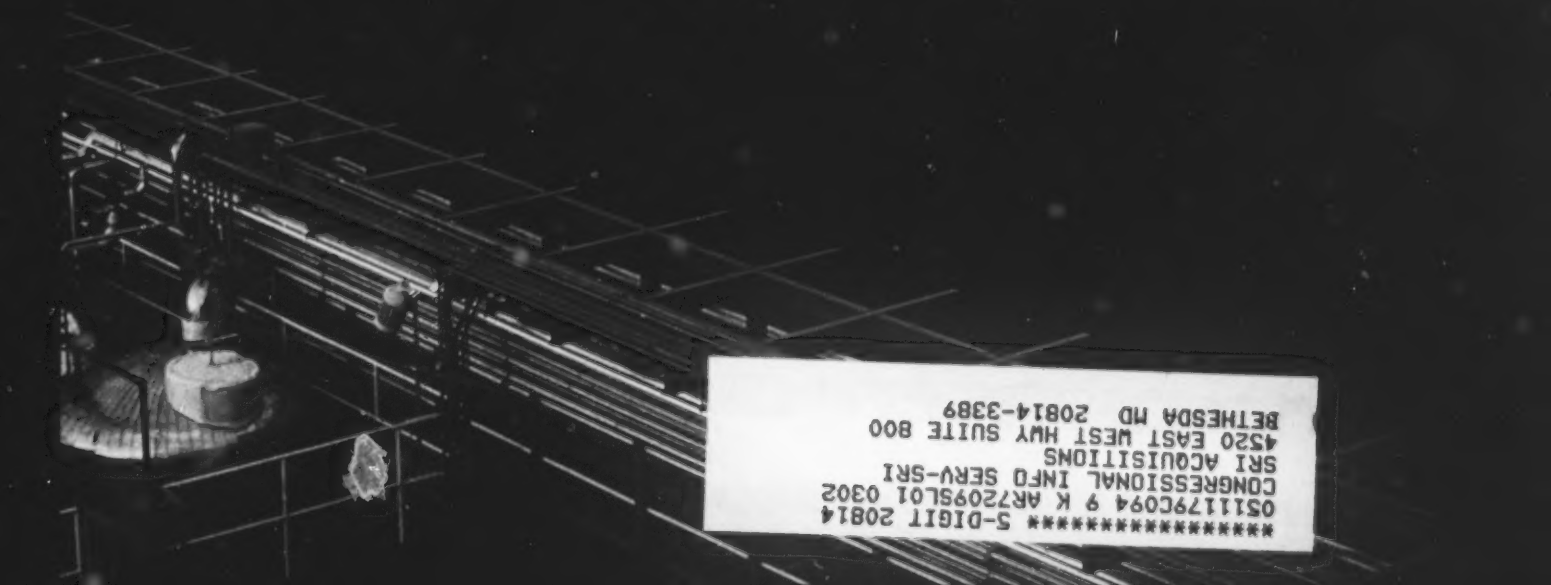

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CHEMICAL & ENGINEERING NEWS

C&EN

FEBRUARY 28, 1994

NEWS OF THE WEEK

- NASA's space station program and Russia's role in the project are vehemently questioned at a House hearing. **Page 4**
- Ethyl Corp.'s spin-off of its subsidiary Albermarle Corp. is set—Ethyl Corp., with 53% of the current firm, will primarily manufacture petroleum additives; Albemarle will make specialty chemicals. **Page 5**
- The Supreme Court rejects an appeal by Vietnam veterans and their families to sue the firms that made defoliant agent orange. **Page 5**
- A number of chemists and chemical engineers are among the 79 new members and eight foreign associates elected to the National Academy of Engineering. **Page 6**
- Chemical industry representatives propose measures to improve the Administration's Superfund reform bill at a House subcommittee hearing. **Page 6**
- Hillary Rodham Clinton visits NIH, stresses Administration's support for basic research and lobbies for health care reform. **Page 7**
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COVER: Hoechst Celanese dyes facility at Coventry, R.I.

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Many chemical companies are hiring temporary employees to meet technical labor needs, largely as a result of the continuing downsizing and cost cutting to improve profits. **Page 25**

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EPA is moving toward implementing various agency-formulated recommendations, as well as incorporating some EPA-specific White House suggestions, to eliminate waste and inefficiency. **Page 32**

Carnegie Commission report suggests reforms for Congress in handling scientific and technical issues—primarily by simplifying committee structures, relationships, and procedures. **Page 34**

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New information about the aromaticity of fullerenes comes from nuclear magnetic resonance studies of encaged helium-3 that indicated presence of ring currents. **Page 40**

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Efforts by the U.S. chemical industry to improve community relations, under the Responsible Care initiative, are encountering a variety of responses, from success to failure, but no one is yet giving up. **Page 8**

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LETTERS

Chemistry, chemical engineering

Councilor T. J. Logan's letter (C&EN, Jan. 10, page 3) makes an interesting point about higher initial pay for B.S. chemical engineers. Yet he seems to have overlooked Le Châtelier's principle—called the law of supply and demand in economics.

Raising the perceived value of the B.S. chemistry degree is laudable, but pointless. Better that we adjust to the demands of the market. First, produce fewer of the less valuable product (B.S. chemistry degrees). Second, produce more of the valuable product (B.S. chemical engineering degrees). Third, convert some of the less valuable product into the more valuable product. For example, chemistry departments should develop one- or two-year postgraduate chemical engineering programs.

I would be quite happy if the marketplace conformed to my preconceived notions of the great value of a good solid chemistry major; sadly, the marketplace is not constrained to follow my notions.

Charles R. Bennett
ACS Orange County Section
Fullerton, Calif.

Fred Tausch Jr., argues (C&EN, Jan. 31, page 5) that an increase in the number of high-paying jobs for chemists will follow from a decrease in the restrictiveness of environmental laws. To the contrary, I believe that the greater the challenges presented by tougher environmental regulations, the greater the demand for clever chemists who can forge new reaction pathways with higher yields and fewer unrecyclable toxic byproducts. The solution to the problem lies elsewhere.

In my opinion, the paramount cause of the underemployment and undercompensation of chemists is the absence of professional-chemist political clout from which economic clout follows. Under the current system, academia dictates supply and the chemical industry dictates demand and compensation, while practicing chemists observe from the sidelines. Public education will help put chemical risks into proper perspective while enhancing the image of the practicing chemist, but education is not enough. I propose a political solution that uses, rather than fights, the public's legitimate concerns about chemical safety issues to provide practicing chemists with the economic clout they seek.

First, ACS should develop and administer a set of certification exams for the professional chemist (P.C.) and publish standards of professional conduct and a code of professional ethics for chemists. These would include the requirement that all commercial chemical syntheses and associated materials management processes and procedures be certified by a chemist P.C., as meeting standards of quality and occupational, consumer, and environmental safety established by the profession.

Second, ACS should draft and press for the adoption of ordinances at the local level and legislation at the state and federal levels that require that a chemist P.C., and a chemical engineer P.E., certify that chemical syntheses and associated materials management processes and procedures meet the standards of practice of their respective professions. Licensing requirements should be mandated for chemists and chemical engineers who develop syntheses for listed hazardous substances or who develop recycling or disposal processes or procedures for their wastes. ACS should target the Toxic Substances Control Act; the Federal Insecticide, Fungicide & Rodenticide Act; the Hazardous & Solid Waste Act; the Superfund Amendment & Reauthorization Act; and the state equivalents of these initiatives.

If the ordinance and legislative initiatives are successful, without both chemist P.C. and chemical engineer P.E. certification, a chemical manufacturer would not be able to obtain the insurance and local, state, and federal permits required to manufacture, formulate, store, use, recycle, or dispose of any chemical.

Under such new standards of practice and ordinance or statutory requirements, a chemical engineer P.E. alone could not ethically or lawfully make such certifications. In this way, legitimate concerns about the hazards of chemicals would work to the advantage of practicing chemists, precluding the substitution of a chemical engineer's judgment where that of a chemist is required. This set of initiatives would provide chemists with political clout via economic leverage and economic clout via political leverage. Salaries for a chemist P.C. should rise to the level of the chemical engineer P.E. in as little as one permit reissuance or insurance adjustment cycle.

Of course, college curricula would also have to be modified to reflect these new requirements. During the changeover period, ACS could offer certified short courses to fill in the knowledge gaps. This would also serve the need of practicing chemists who wish to seek P.C. certification.

If chemists do not organize and act to protect the public from the mismanage-

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Temporary Employees Fill Niches in Chemical R&D Work Force

■ ***Downsizings and cost cutting prompt chemical firms to go outside the company to meet their technical labor needs***

Ann M. Thayer,
C&EN Northeast News Bureau

The chemical industry has been showing signs of recovery. But recovery has not come without sacrifices. Companies have been reducing expenses, reorganizing operations, and cutting work forces to improve earnings performance. According to the U.S. Department of Labor, chemical employment decreased in 1993 by 16,000 jobs, to 1.06 million, largely the result of downsizings at companies. And this downsizing has hit R&D as well as other segments of the industry.

In light of a bleak outlook for technical jobs (C&EN, Oct. 25, 1993, page 42), many in the industry believe that the days of being assured of indefinite regular—what was once called permanent—employment may be gone. At many companies, contract and temporary employees are the first to be cut. Other firms, having reached what they are calling core staffing levels, are trying to increase efficiency and productivity and may turn to temporary help to handle continuing workloads and control personnel costs.

The overall temporary employment market has been growing dramatically, according to the Washington, D.C.-based Economic Policy Institute (EPI), expanding 36% between March 1991 and July 1993 and contributing nearly 28% of the 1.9 million new jobs created during that period. The chemical industry has long used highly skilled contract employees, specifically engineers, in plant construction and expansions, process development, and environmental projects. Now, however, there is a growing use of temporary employees, many at the professional level, in R&D and other technical areas. And employment firms are specializing in providing temporary employees with technical backgrounds.

"The name of the game is value-added services," says John Skaff, senior vice president of MTI, a St. Albans, W.Va.-based firm that supplies contract engineers and temporary workers to the concentrated chemical industry in the surrounding Kanawha Valley. Contract companies are being asked to supply not only skilled people, he explains, but often also services or equipment that companies do not have or do not want to purchase themselves.

For example, a company may want a temporary engineer familiar with computer-aided design to arrive with a computer system in hand. "MTI can buy a computer workstation faster and less expensively than a client who has to go through internal requisitioning," explains Skaff. "And, if we have a computer in stock, we can have it and a person there the next day to do the job and then leave when it's done." At the same time, he says, chemical companies are "outsourcing" more of their work because they no longer have the internal resources and are depending on contract firms to take greater leadership roles in projects.

The market for contract engineers has been very good from two perspectives, says Skaff. Not only are companies looking for contractors to fill project needs, but the contract engineering firms themselves have been "blessed" with a large number of early retirees from chemical companies. Contract firms are now competing to attract these individuals.

Although the use of temporary employees by chemical companies is growing, companies such as Dow Chemical and Union Carbide do not foresee significant in-

Lab Support's Steven Messick (above), Woodrow Smith fill in on a variety of technical jobs.

Temporary R&D employees in unique roles at DuPont and Henkel

Exploratory R&D for new business development can be a very uncertain area in which to commit resources. At the same time, it can have special needs and require expertise, especially in emerging technologies. And such technologies are not always part of a company's core scientific base. To keep the risks down, the costs low, the pace brisk, and the level of flexibility high, Vinay Chowdhry in DuPont's Division of Corporate New Business Development, has put together an R&D team that relies heavily on both temporary employees and a group of DuPont researchers drawn from throughout the company.

"Our role is to create major new businesses as well as to experiment with new ways of developing businesses as market conditions change," says Chowdhry, who is general manager for the food quality management systems business initiative. The food quality systems team is developing instrumentation and testing that are expected to improve the analysis of the quality and safety of products and processes in the food industry. It also accesses technology through relationships with outside companies and other organizations.

"The primary driver for bringing in temporary workers was to ensure that we could get up to speed real fast," says Chowdhry. "We can bring in people with backgrounds we do not have when we need them, but also on short notice change the pool of people working on the project as it evolves. And, quite honestly, keep the costs way down. It's been extremely successful."

Temporary employee Willie Dorine Hudson on DuPont team tests and evaluates instrumentation.

At times, the number of contract or temporary workers has been one third or more of the team. Over the five-year life of the project, Chowdhry estimates that more than 100 temporary workers have been employed. By working closely with temporary help companies, and also by screening temporary as well as DuPont employees very carefully to find good matches, Chowdhry says that there has been no difficulty in finding high-quality people on very short notice. Temporary employees on the team have ranged from the bachelor's to doctorate level at all stages of their careers and in the areas of chemistry, biology, mathematics, various engineering disciplines, and computer programming.

DuPont has worked hard in running the team to ensure that no distinction is made between temporary and permanent DuPont employees, says Chowdhry. But, so not to mislead people, the

creases in their numbers over the next few years. Chemical companies are somewhat hesitant to talk about their use of temporary or contract employees, partly because many of them have gone or are going through downsizings. They are sensitive both to the impact these cutbacks will have on employee morale and to employee reaction to seeing the work of displaced employees being done by temporary ones.

A spokesman for Dow Chemical says the company uses a small percentage of contract employees at all levels in R&D and engineering work for very specific, well-outlined jobs. The situations for which outside employees are used generally fall into two categories: when Dow has the need for expertise it does not have internally, or when the work is short term.

Donald Gatewood, manager for recruiting and university relations at Union Carbide, says Carbide's use of temporary employees probably is more prevalent in engineering where the workloads are variable. Temporary or contract employees add flexibility in satisfying project needs and peak workloads. When a project is completed, the number of engineers can be reduced on the contractor side of the project without adversely affecting permanent employees.

In addition to meeting peak or short-term project demands, temporary help provides a way to get around hiring freezes, to cover vacancies when employees are on leave, or to fill high-turnover positions. Repeated hirings and firings, or the alternative of keeping employees on the payroll during lulls, can therefore be avoided. Companies wanting temporary employees generally contract with a company that supplies workers with the desired skills on an "as needed" basis. These workers are then paid on an "as used" basis at an agreed upon rate.

Since temporary employees are not their employees, client companies do not have the same responsibilities that they have for their own employees. Thus, many users of temporaries tout the potential cost savings from avoiding long-term payroll, retirement, and severance commitments, as well as rising benefit and other personnel costs. Temporary help companies, as the employers, usually fall under federal labor laws and must provide benefits such as health insurance, worker's compensation, and unemployment insurance.

To receive benefits and vacation leave, employees typically must meet eligibility requirements such as working a minimum number of hours per year. In some instances, temporary help companies offer retirement and savings plans to longer term employees as a means to attract or retain them. These overhead costs, as well as employee wages, are recovered in the billing rate charged to clients. Independent contractors or temporaries who work through third-party placement agencies must obtain their own insurance.

The temporary employment industry is extremely fluid, with a turnover rate of 600% or more, explains Bruce Steinberg, a spokesman for the National Association of Temporary Services (NATS), an Alexandria, Va.-based trade association. Because of the nature of the industry, many temporary workers don't work long enough for one temporary help firm or do not choose to participate in long-term benefits, he says, especially retirement.

But opponents of temporary help, such as EPI and the San Francisco-based group New Ways To Work, say that contingent workers—including part time and tempo-

company has made clear that working on the team is not a stepping stone to permanent employment with DuPont. And there have been no exceptions. Chowdhry believes that open attitudes and frank discussions have contributed to team members putting aside concerns about employee standing and instead have led to a strong sense of focus, intellectual excitement, and, in turn, loyalty to the project itself.

As a member of the DuPont team since June, Jay Bass says his experience as a contractor has been unique. What is unusual, he says, are both the large number of temporary employees and the equitable way in which they are treated as fellow collaborative scientists. Bass describes himself as a Ph.D. bioengineer—a multidisciplinary degree involving the development of instrumentation for life science applications.

Bass worked as a contractor for a few years during graduate school and has continued to do so since recently finishing his degree. Incorporated as an independent contractor, he must not only find his own assignments and benefits, but also must negotiate his contract. With the uncertain market for permanent jobs, Bass seems content to work independently, viewing it as a way to take advantage of new opportunities while earning a competitive salary.

Exceptions to the usual type of temporary employee on the DuPont team are those fresh out of undergraduate or graduate school. Chowdhry says he is looking for individuals with very specific skills and some experience in the workplace. In contrast, Judith C. Giordan, vice president for R&D at Henkel, uses many recent graduates and undergraduates, as well as higher level people, as an integral part of that company's technical support staff.

Henkel does not employ any permanent employees at the technician level, she explains, which means that Ph.D. scientists play a greater hands-on role in research and that temporary employees are not replacing permanent ones. To fill short-term technical support needs with qualified workers, the company usually hires temporary employees at the bachelor's and master's degree levels. This approach has been very successful—Giordan cites some instances of young temporary employees bringing recently learned up-to-date expertise or skills—and has become part of the company's R&D culture.

Overall, Giordan is extremely positive about the merits of using temporary employees and specifically sees the use of younger workers as a great opportunity for the temporary employees themselves. "Many times, because the job market is tight, they can't get a job if they don't have experience," she says. "A lot of temps have gone on to permanent jobs using [working at Henkel] as their experience base ... [while] it gives the company the highly skilled temporary work force it needs."

Chowdhry and Giordan agree that a major concern of companies that use temporary employees is the disclosure of proprietary information, and both say employees are asked to sign confidentiality agreements. But, if necessary, says Giordan, it is possible to define the nature of the work very clearly so as to avoid an employee's having to know too much—for example, why data are needed or what the market end uses are. The company "is trying to protect everyone," says Giordan. "It wants to make sure that temporary employees are not put under a liability situation if they were to get a full-time job in a competitive area."

raries—do not have access to training and advancement opportunities and, more often than not, lack the benefits and protections afforded other workers. Specifically, these groups take issue with inconsistent state eligibility requirements for unemployment insurance, qualifications for pension coverage, job security and safety, and access to health care coverage. The Department of Labor has set up a special task force to study the contingent work force. And a broad range of issues related to contingent workers is being examined by Sen. Howard M. Metzenbaum (D.-Ohio), who heads the Senate Labor & Human Resources Subcommittee on Labor.

A significant amount of concern also centers on companies believed to be using contingent workers not to supplement their work force, but rather as low-pay, low-cost replacements for large numbers of full-time employees. "Companies have always used contingent workers to supplement full-time workers to meet additional demand," says Greg Watchman, an aide in Sen. Metzenbaum's office, "but now they are being used to replace full-time workers and eliminate full-time jobs." If the trend continues, he adds, some observers expect contingent workers to outnumber permanent employees by the end of the century.

But many connected with the temporary employee industry say that this is not what the industry strives to do or how it works. Replacing permanent employees "is not temporary help, it's cheating," says H. Tom Buelter, chairman, chief executive officer, and president of On Assignment, a Canoga Park, Calif.-based temporary help company. "Temporary help has become a management tool. It's about managing your ups and downs in the work force and labor market shifts.

"Companies already have made commitments to their work forces, but when there is extra work, then it is done by the professional temporary work force," he says. "The reason [temporary help companies] have not been affected and probably won't be affected by any recessions is because our people actually do work. Companies don't hire temporary employees and then not know what to do with them."

Temporary help, says NATS, can act as a flexible bridge to permanent employment by providing training and job experience in skills that are in demand; providing opportunities for workers to "showcase" their talents with a variety of potential employers; and providing relief from financial pressures while workers look for better job offers.

On Assignment's primary operating division, Lab Support, specializes in providing temporary technical employees—an area that it says is one of the fastest growing niches. On Assignment's revenues in 1993 grew 17%, to $38.1 million, and net income jumped 40%, to $2.5 million. The division has about 30 branch offices across the U.S. About 1,200 Lab Support employees are on assignment at any given time, with about 35% in R&D.

Lab Support was founded in 1985 by Bruce Culver and a fellow chemist, Raf Dahlquist. Culver, who remains a stockholder in the company, now operates Lab Staff, which supplies temporary technical employees in the U.K. and France. Many of Lab Staff's clients are U.S. companies with operations overseas, says Culver, and the needs are similar to those in the U.S. In the U.K., Lab Staff has four offices and employs about 400 temporary scientists on a given day. With two offices located near Paris, about 150 temporary staff are employed in France.

LABORATORY WASTE MANAGEMENT

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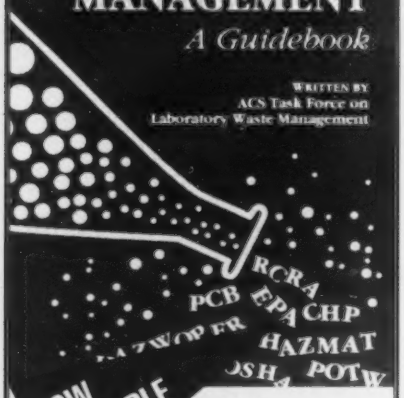
WRITTEN BY
ACS Task Force on
Laboratory Waste Management



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Clients of Lab Support and Lab Staff include many major companies in the chemical, petrochemical, environmental, biotechnology, pharmaceutical, food, and other industries. High-risk or high-liability positions, including many in medical areas, frequently are avoided by temporary technical help companies. Most assignments last for an average of about four months. The success of these two companies, says Culver and Buelter, stems from employees being selected, placed, and managed by a system of account managers. These account managers are themselves trained scientists with industrial experience who can work knowledgeably with client companies.

Both Lab Support's and Lab Staff's employees are chemists, biochemists, biologists, and microbiologists ranging from the master's degree level with upwards of eight years' experience to the bachelor's degree level with less than one year's experience to technicians with some chemistry or biology background. The typical employee is a young college graduate with anywhere from zero to six years of experience.

"The company is providing a great opportunity for the entry-level person," says Buelter. Young employees can get their feet in the door at major companies, gain valuable experience with different employers, obtain exposure to different kinds of work, and get paid for it. After building their résumés, even if they have to start in mundane positions, they can move on to better, permanent positions. Lab Support offers assistance to its employees in developing interviewing skills and in writing résumés.

A good example is Chris Runz, who received his undergraduate degree in biochemistry in spring 1993 and began working as a temporary employee while awaiting admission to medical school. He obtained a temporary position at Hoechst Celanese in late September 1993, having been placed by Lab Support only a week after applying. Runz views his temporary work experience very positively and is happy to have been able to find work in his undergraduate field. Admittedly, he says, the work is routine analytical work, but "at least I've been given the opportunity to work full time."

Many employers use the temporary work experience as a means to assess the skills and acceptability of new employees before hiring them for the long term. Less risk is involved in this approach be-

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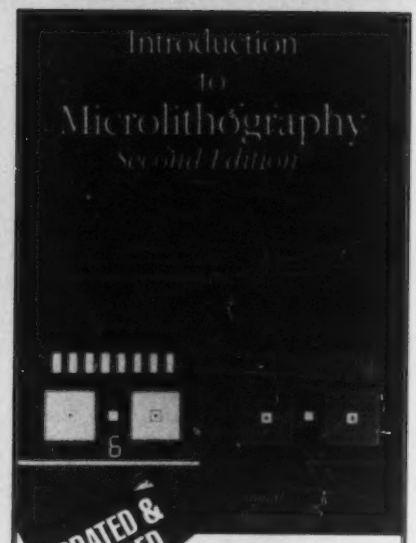

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The second edition of this best-selling volume, **Introduction to Microlithography,** reviews the theory, materials, and processes that are used in the lithographic process. It opens with a brief historical introduction to microlithography. Subsequent chapters discuss four major topics: the physics of the lithographic process; organic resist materials; resist processing; and plasma etching.

Designed as a tutorial for researchers with no experience in the field, the volume will also prove invaluable for those already involved in microlithography. Includes numerous references for more detailed reading on specific aspects of microlithography.

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Essential Resources for the Chemical Sciences

cause, although companies still may be investing in training, they have not had to spend time recruiting nor have they made any long-term commitments. Depending on the length of an assignment or the amount of time since its completion, a client company may have to pay a fee to the temporary help company when hiring the temporary employee permanently.

Even though it means that they are losing employees, executives and managers at temporary help companies see the transitions to permanent employment as complimentary—reflecting on their ability to recruit, screen, and appropriately place quality employees. Buelter says about 20% of Lab Support's employees convert to regular full-time employment on their first assignment. Another 30% return for new assignments, and the remaining ones move on for whatever reasons. Skaff of MTI says that, with the downsizings and hiring freezes in the chemical industry, he recently has seen fewer transitions from temporary to permanent employment than in previous years.

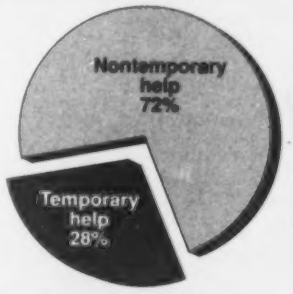
Executives at temporary employment companies say that their technical employees are paid competitive, or higher, hourly wages than comparable permanent employees. Client firms are said to be usually willing to pay the premium wage, and added overhead costs, for short-term hires.

In some instances, the higher pay helps offset lower benefits. For example, a day off for vacation or illness is often unpaid leave. In most cases, the higher pay helps to attract and retain good employees who might otherwise not be interested in temporary employment.

"Temporary work provides flexibility to both the employer and the employee," says Buelter. For many employees, at any level and any stage in their careers, temporary work serves as a buffer between jobs, or as a way to change jobs or find work after moving. Buelter says very few people are working on a temporary basis after two years, although some have become long-term employees of Lab Support.

Ida Ita, an analytical chemist with an M.S. degree, has worked twice for Lab Support—once in the late 1980s after being affected by downsizing in the pharmaceutical industry and again recently when the drug company she worked for moved her department out of state. "The world is constantly changing, and it doesn't look too good right now [for jobs]," she says. "I am hoping that something permanent will show up, but if not, I will continue working on a temporary basis."

Temporary help is about one fourth of new jobs



New jobs[a] = 1.9 million

a All U.S. jobs created between March 1991 and July 1993. **Source:** Economic Policy Institute analysis of Bureau of Labor Statistics data

Ita was placed at Ortho Biotech in Raritan, N.J., by Lab Support in May 1993. Currently, three temporary and two permanent employees work in her department. She says there is no difference in how temporary employees are treated in terms of their training, safety, or involvement in company activities. "I think [other employees] have to accept you," says Ita. "Everyone has work to do and, if you are capable, you do it and you are paid accordingly."

Employees who have the most difficult time finding temporary work are Ph.D.s, says Buelter, because companies are not interested in hiring them for temporary assignments. Although many Ph.D.s come to Lab Support looking for work, he says, the company does not hire them because they are too difficult to place. However, Culver says that Lab Staff is able to find temporary positions for Ph.D.s.

"People lambaste the whole concept of temporaries, thinking that the idea of providing temporary scientists is undermining the full-time employment of scientists," says Culver. "This isn't the 1960s anymore when people could go to work for a big company and plan to retire from the same company. ... The world is more dynamic and so careers change as well.

"In our education of scientists, we just have to be a little bit more street-smart and a little bit more flexible—and [we need to] have a little broader perspective of where we stand in relation to our careers." □

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